$$\frac{g m_p}{R^2} > \frac{g m_a}{R^2} - m_a \phi v.$$

This inequality of attractive moments must determine motion toward the sun in favour of $\frac{g\,m_p}{R^4}$, and this condition holding good for any value of g and R, it follows that the polar inflow and equatorial outflow must take place, provided only that space is not empty, as supposed by La Place, but filled with either an elastic or non-elastic fluid.

To put it in another way, Mr. Archibald imagines that in order to determine an outflow from the sun it is necessary for the centrifugal moment $m_a\,\phi\,v$ to exceed the moment of gravitation $\frac{g\,m_a}{R^2}$, whereas according to my view, the value of the former determines only the rate of outflow, but is immaterial as regards the principle of action. The projection of dust is entirely dependent upon the outflowing current. I leave it for Mr. Archibald to determine for himself the velocity of current necessary to move a particle of dust of given size and weight away from the sun in opposition to its force of gravity, which I am well aware is twenty-seven times that of the earth on its surface.

The gaseous current is of course produced at the expense of solar rotation, but this expenditure of energy is relatively much smaller than that lost to our earth through tidal action, and may be neglected for our present purposes. It is moreover counterbalanced by solar shrinkage as explained in my paper.

C. WM. SIEMENS

Review of "Aristotle on the Parts of Animals"—A Correction

SINCE the publication of my review of "Aristotle on the Parts of Animals," a correspondent has called my attention to an article by Prof. Huxley, "On Certain Errors respecting the Structure of the Heart attributed to Aristotle" (see NATURE, November 6, 1879), in which the Professor corrects the common error, attributed to Aristotle, of describing the heart of the higher animals as possessing three cavities only. In ignorance of this fact I assigned the merit of originally detecting the error, so long attributed to Aristotle, to Dr. Ogle, who tenders, I have no doubt quite independently, the same defence of the matter. I now write to give the priority of the detection of the error to Prof. Huxley, and to thank my correspondent for having afforded me an opportunity of studying a most original and instructive essay.

BENJAMIN WARD RICHARDSON

25, Manchester Square, March 27

Deep-Sea Exploration in the Mediterranean

I SHALL be obliged if you will kindly announce in NATURE that, taking into consideration the vote expressed at one of the plenary meetings by the Third International Geographical Congress at Venice, the Italian Government has decided that the deep-sea exploration in the Mediterranean be continued during the forthcoming summer; and towards the end of July or beginning of August next I am to embark on board the surveying steamer *Washington*, Royal Italian Navy. About one month will be devoted to deep-sea exploration under the able direction of Capt. G. B. Magnaghi, R.N.

The study of the animals collected during last year's cruise will be completed with that of those we hope to collect next summer. Since presenting my Preliminary Report to the Geographical Congress, I have looked more carefully into the fishes collected last year; amongst them are two specimens of the rare *Malacocephalus lævis*, Lowe, dredged in 508 metres off the south coast of Sardinia, and in 823 metres off Mauritius (Egadi, Sicily); and two specimens of the still rarer *Coryphœnoides serratus*, Lowe, new to the Mediterranean fauna, dredged from depths of 2805 and 2904 metres off the west coast of Sardinia.

Dr. J. Gwyn Jeffreys was here a short time ago, and has examined the mollusca, on which he will report.

HENRY HILLYER GIGLIOLI

R. Istituto di Studi Superiori in Firenze, March 23

The Basque Whale in the Mediterranean

I WAS very much interested in Mr. Clement R. Markham's most important communication on the "Whale Fishery" in the Basque provinces of Spain, produced in NATURE (vol. xxv. p. 365). Mr. Markham has carefully collected imporant materials for the history of a whale (*Balæna biscayensis*), which, if not quite extinct, appears to have become so, to all intents and purposes, in a region where it was once so common as to have given rise to an important industry, and to have had a powerful influence on the habits of the Basque people along the northern coast of Spain. Mr. Markham gives solitary instances of the appearance of the whale off the Basque coasts, up to a very recent period, and says that the last instance of its occurrence which came to his knowledge, was on February 11, 1878, when a whale was sighted off Guetaria, and successfully harpooned. This bit of news must have interested all cetologists, and I hope that it may interest Mr. Markham and the readers of NATURE to know that a fine, nearly adult female of *Balæna biscayensis* was captured just one year before, in the Mediterranean, viz. on February 9, 1877, at Taranto. It was ably and fully described by Prof. F. Gasco (*Mem. R. Acad. Scienze di Napoli*, vii. 1878); the entire skeleton is in the Museum of Comparative Anatomy in the University, Naples, in the Central Collection of the Italian Vertebrata at Florence. I preserve a portion of the skin of the snout, with short hairs, and a model of the entire creature, reduced to one-twelfth, carefully executed from drawings and measurements taken from the whale immediately after death. I know of no other recorded instance of the capture of a true whale in the Mediterranean.

HENRY HILLYER GIGLIOLI

R. Istituto di Studi Superiori in Firenze

Wind Measurements

AFTER reading the interesting article in NATURE, vol. xxv. p. 486, on wind measurements, the reader cannot but revert to the very unsatisfactory state of anemometry as it now exists. This is only too apparent from the reports which appear in the papers after a gale, and in which are generally detailed the estimated pressures and velocities of the wind as recorded by the anemometers at the principal meteorological stations. Thus during the gale of the 13th-14th of October last we were told that a pressure of 53 lbs. per square foot was recorded at Greenwich, and at the Bidston Observatory, Birkenhead, the pressure reached the alarming figure of 79 lbs. Now it may be readily shown without much calculation, that such pressures as these few buildings could withstand that were not of more than ordinary stability, not to mention the destruction of tall factory chimneys, which, when of the usual dimensions, will not stand a pressure of 30 lbs. per square foot. Yet no such destruction took place. I think, then, we must confess with T. Hawksley, F.R.S. (vide paper read before Section of British Association meeting, York, 1881, on Pressure of Wind on a Fixed Plane Surface), that our present anemometrical instruments are little better than philosophical toys.

C. H. ROMANES

Worthing, March 27

IN the account of D'Ons en Bray's anemometer, which I printed to accompany a drawing of that instrument at the Meteorological Society's Exhibition the other day, I stated that it was probably the earliest registering anemometer. I now find that I am mistaken, but as I erred in company with the President of the Society, I feel that I may well be excused. Until a still earlier instrument turns up, the idea of a registering anemometer must be ascribed to Sir Christopher Wren. In 1663 (see Birch's "History," i. 341, plate iii.), he laid before the Royal Society an account of his "weather clock," which is in fact a recording anemometer, but for direction *only*, together with an instrument for "showing degrees of weather," probably a self-recording barometer, but the description is not clear. The spindle which drives the hour-hand of the clock carries a pinion which moves a rack, long enough to pass out clear of the case on each side. At the end of the rack there is a pencil, which bears upon a disc keyed on to the spindle of the direction-vane. The disc carries a printed diagram, a series of radial lines indicating direction, the time being shown by a number of concentric circles. The irregular line drawn by the pencil records the direction of the wind. A fresh paper is placed on the instrument every twelve hours.

Whilst upon this subject, perhaps I may be allowed to call attention to a paper by Richard Lovell Edgeworth, on wind pressure, in the *Phil. Trans.* for 1783, p. 136. It contains the results of a series of experiments undertaken to determine the variations in the pressure of the wind upon surfaces of equal area, but of different forms. This is, no doubt, the paper referred to by Robinson, as the source whence he derived the

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hint of his well-known "cup" anemometer, although Edgeworth only speaks of *bending* the various pieces of metal which formed the terminations of the arms of the revolving apparatus with which he was experimenting. This paper was alluded to by the president, in the course of his address to the Meteorological Society, but in such a manner as to lead me to suppose that it was not very generally known.

May I ask when, and by whom the word "anemometer" was introduced? The earliest instance of the use of the word, with which I am acquainted, is by D'Ons en Bray, in 1734. I expect that it is of French origin. RICHARD B. PROSSER

Vivisection

IT is due to Prof. Yeo to state that while enumerating in his article on Vivisection the texts which in his opinion bore most directly upon the subject, he did not omit the case of the swine to which Mr. Stevenson alludes (NATURE, vol. xxv. p. 483). I may, observe, however, that as Prof. Yeo's argument only required to cite the texts which convey the authority of our Lord, he did not make out so strong a justification of physiological method on biblical grounds as he might otherwise have done. The whole philosophy of "scape-goats" and of animal sacrifice in general, clearly rested on the assumption that the Deity considered vicarious suffering of animals for the benefit of man, not merely to be what Lord Coleridge would term "lawful," but even desirable to the extent of rendering it obligatory on man to "shed the blood" of lower creatures for the purpose of obtaining immunity from evil.

This is not the place to consider such a topic at length, but after what has already appeared in these columns it seems worth while to observe that anti-vivisectionists would show themselves most politic by not attempting to carry their controversy into the domain of biblical ethics. The uniform opinion entertained by the canonical writers touching the importance and the rights of animals in the divine scheme of things, appears to have been that which is so tersely expressed by the Jewish Apostle of the Gentiles—"Doth God take care for oxen?"

THE WRITER OF THE ARTICLE ON "VIVISECTION"

IT is with great regret that I inform you, and through you Miss Cobbe and the readers of NATURE in general, that I have been made the victim of a *ridiculous and ill-timed hoax*. The little anecdote of Miss Cobbe which appeared in NATURE, vol. xxv. p. 459, is, it appears on investigation, quite apocryphal; yet my informant, when relating it to me, asseverated its truth so strongly, and gave me so many corroborating details, that I did not hesitate in saying that "I knew it to be true." He even ventured to "name" the celebrated vivisectionist whom Miss Cobbe was supposed to have interviewed. Therefore, when doubts began to be cast on the accuracy of my statements, I communicated with this gentleman, who informed me that the whole of this conversation between himself and Miss Cobbe is *totally imaginary* and never took place. "A fellow-feeling makes us wondrous kind," and I am sure Miss Cobbe, having been so often victimised herself, and led to believe ridiculous tales of hideous and impossible torture inflicted by high-minded, scientific gentlemen, will sympathise with me in my chagrin at finding myself a victim to my own gullibility.

May I be allowed to add, Sir, a serious postscript to my letter?

We none of us—I least of all—doubt the value of Miss Cobbe's advocacy of any cause. Had not the practice of vivisection been based on an earnest seeking after knowledge, it had surely fallen ere this before Miss Cobbe's stout blows. Now whilst we are disputing as to whether the practice of vivisection be right or wrong, a far more serious question—I had well-nigh said "crime"—is confronting us. Owing to the extraordinary demand for rare (not necessarily "beautiful") birds' skins, for the adornment of women, we are threatened with the rapid, almost immediate, extinction of some of the most wonderful species of the world's avifauna. I saw, in a milliner's shop in Regent Street, the other day, four birds of paradise, two trogons, scarlet ibises by the dozen, a rare goatsucker, kingfishers, orioles, and bee-eaters, not to mention many other birds whose greater abundance might seem to excuse their wholesale sacrifice. Now, Sir, the human race has already had to mourn the destruction of the dodo, the solitaire, the great auk, and the moa: let us not add to this list the *paradiseidæ*, the trogons, and the humming-birds. If then, Miss Cobbe will only place herself at the head of an Anti-bird-skin-wearing Association, she will find one of the most grateful and humble of her followers in your obedient servant, H. H. JOHNSTON

PS.—I take this opportunity of remarking, that I have no connection whatever, in an official capacity, with the Zoological Gardens. I headed my first letter thus, merely because it accidentally happened that I borrowed pen, ink, and paper, and wrote it there.

Tudor House, Champion Hill, S.E., March 27

YOUR correspondent, Mr. C. A. Stevenson, referring to the miraculous narrative of St. Mark, chap. v., verses 26-32, reasons to the effect that if 2000 swine were destroyed to alleviate the sufferings of a single man, then are those physiologists to be justified who, for the benefit of the whole human race, sacrifice a few animals. But, unfortunately for the argument, neither from the narrative of St. Mark, nor from those in the other gospels, does it appear that the permission given to the "unclean spirits" to pass into the swine, after their expulsion from the "demoniac," in any way contributed to his cure. On the contrary, it is distinctly implied that the demons might have been sent elsewhere than into the swine. For, according to St. Mark, they "besought" that they might not be sent "away out of the country"; or, as St. Luke has it, that they might not be commanded "to go out into the deep," that is into the "abyss," elsewhere translated "bottomless pit." Thus, it seems to be taught that when driven out of the man, the demons might have become simply disembodied spirits; and, indeed, so far as we can gather, the permission to enter into the swine was purely *ex gratiâ*.

Hence any pro-vivisection argument to be sought in the fate of the swine must, I fear, assume a form differing somewhat from Mr. Stevenson's; but which I prefer not to specify.

W. S.

AS no one has made any remarks upon the passage in Mr. H. H. Johnston's letter, in which "a distinguished man of science" is said to have twitted a lady with "wearing ostrich feathers which are plucked from the *living bird*, causing most exquisite pain," will you allow me to inform the fair portion of your readers that they may wear ostrich feathers with clear consciences if they can make sure of these having been taken from living birds, *i.e.* from those kept on ostrich farms. It used, I believe, to be the practice to pluck out the feathers; but the inflammation set up proved injurious or fatal, as must be obvious, and the life of a bird worth perhaps 60*l.* or 80*l.* was endangered for a crop of feathers worth 7*l.* or 8*l.* When the feather is quite ripe and at its best, the quill is cut with a pair of scissors or sharp knife about half an inch from the skin, and the stump moults out in the ordinary course. Probably by far the larger quantity of plumes come from tame birds. In 1878, 57,144 lbs. were exported from the Cape, and there are probably considerably more than half a million of tame birds in South Africa at this moment.

Ladies who carry their anti-vivisection consistency so far as to have serious misgivings about wearing leather boots, must still be cautious in the matter of ostrich feathers; since numbers of birds are hunted down for their plumes, although we can hardly suppose them in this case even to be plucked out while the ostrich is alive. They would come quite as easily from a dead but still warm bird, and the hunter would not be exposed to the risk of that tremendous kick an ostrich can give. I shall be glad to know on what authority birds of paradise are stated to be "skinned alive." ARTHUR NICOLS

Phænology—An Appeal

THE undersigned would urge all those who take an interest in the phænology of plants to make as many and as accurate observations as possible, and they recommend as specially suitable the following plants (the dates after the names give the mean for Giessen, calculated from many years). The observations should be made on plants standing free, plants on espaliers being excluded, and they should be made daily, accurate results being only obtained in this way.

A.—FIRST BUDS OPEN

1.	*Ribes rubrum* (red currant)	April 14
2.	*Prunus Avium* (wild cherry)	,, 19
3.	*Prunus spinosa* (sloe)	,, 20

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